

Market outlook

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Capital Markets Day 2015



Agenda market outlook

- 1 Macroeconomic and downstream outlook
- 2 Primary metal market
- 3 Bauxite and alumina market
- 4 Long-term outlook



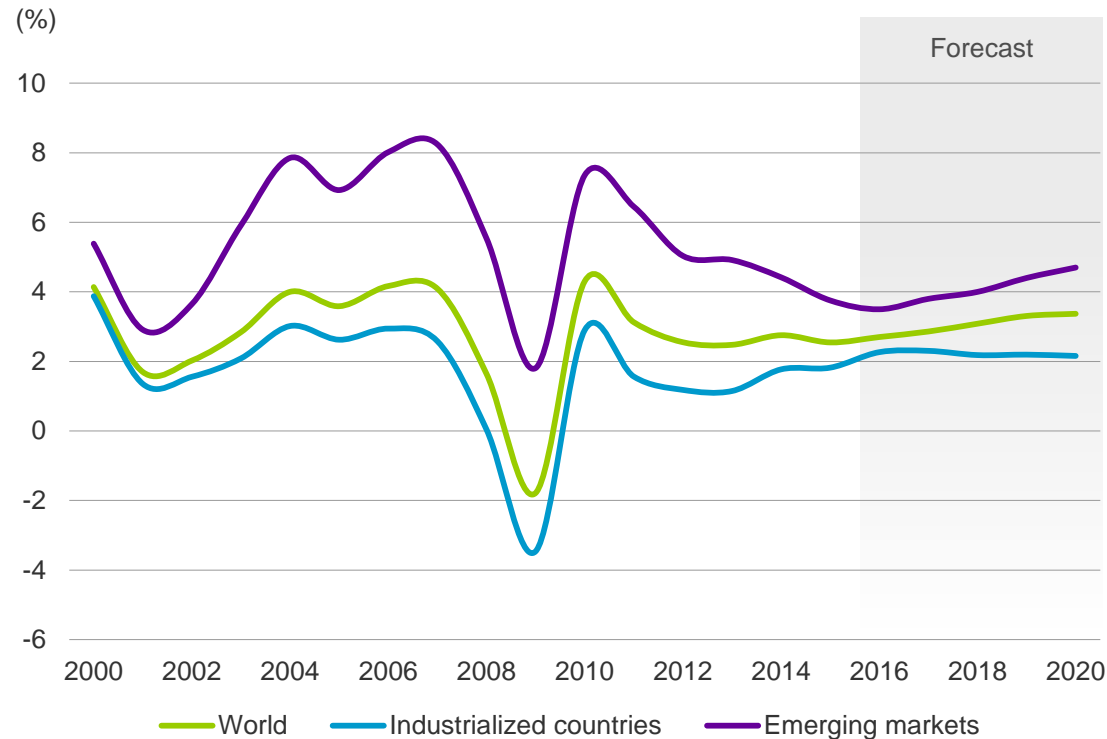
01

Macroeconomic and downstream outlook

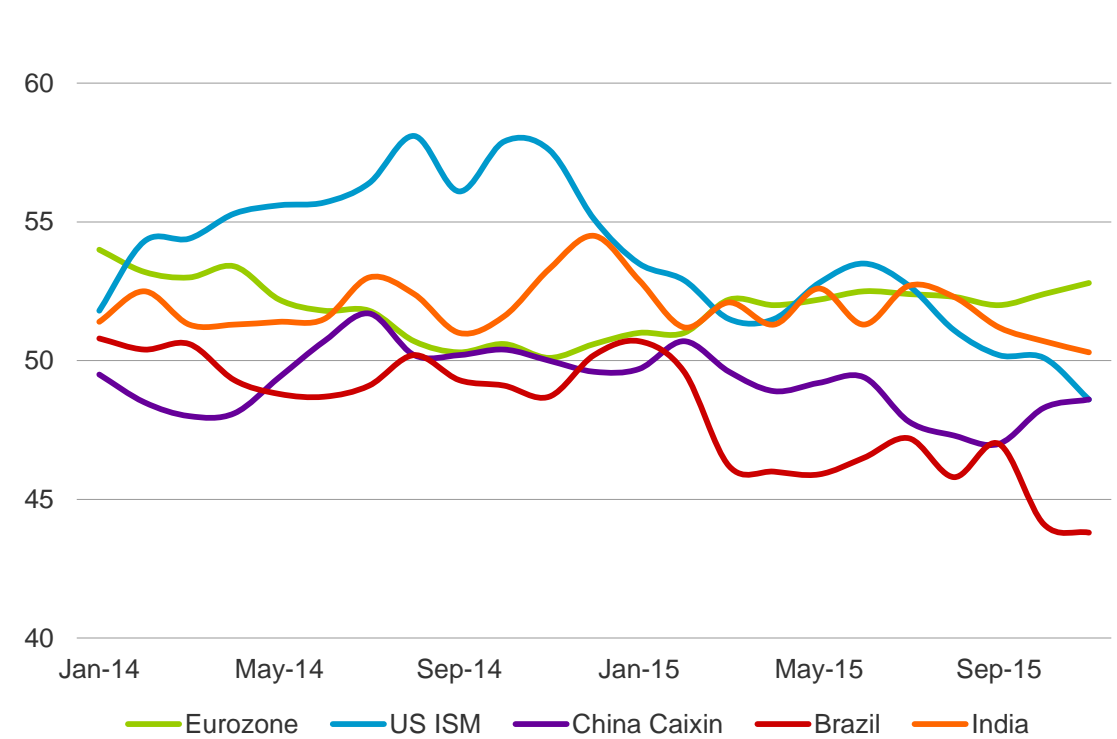
Macro outlook affected by emerging markets slowdown

Improving global economic growth medium term

Real GDP, annual growth



Manufacturing Purchasing Manager Indexes

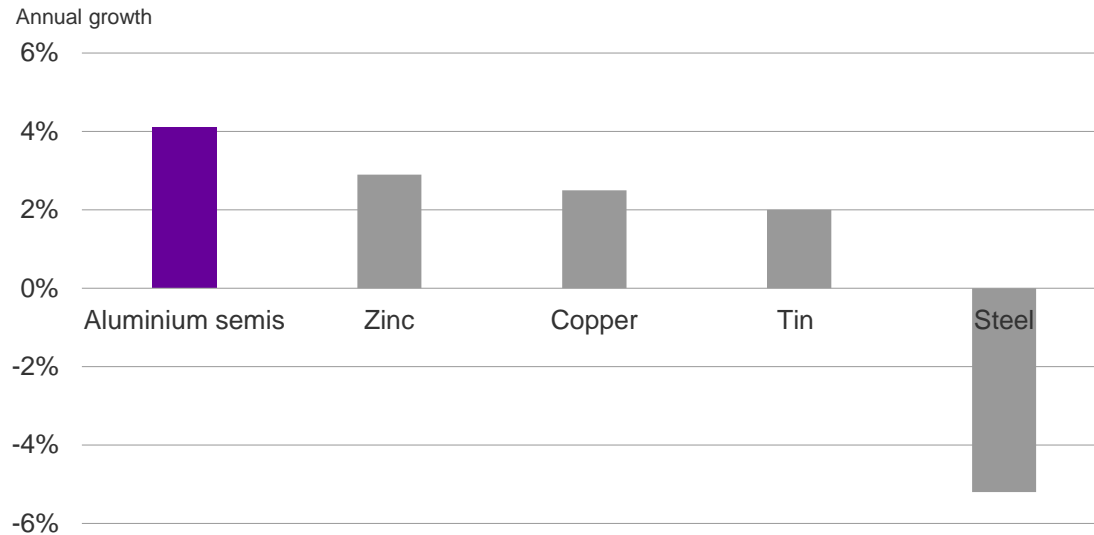


Source: Global Insight, Markit, Thomson Reuters

Aluminium demand holding firm despite macro economic volatility

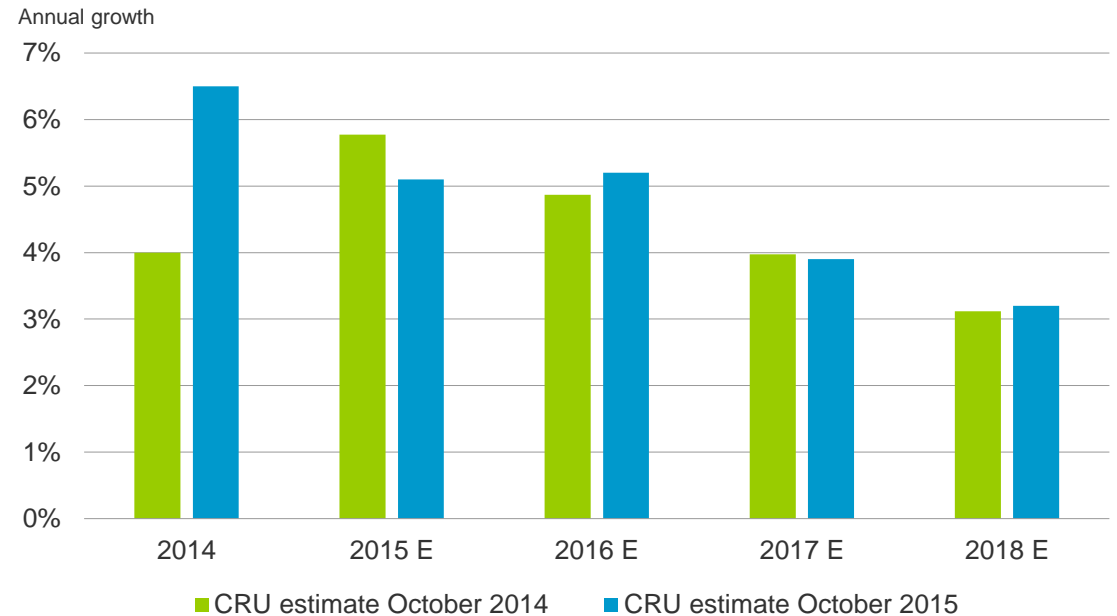
Both macro and substitution effects driving demand growth

Demand for selected base metals, China 2015



- Aluminium demand more diversified than other base metals
- Steel and copper more affected by construction market

Semis demand, North America



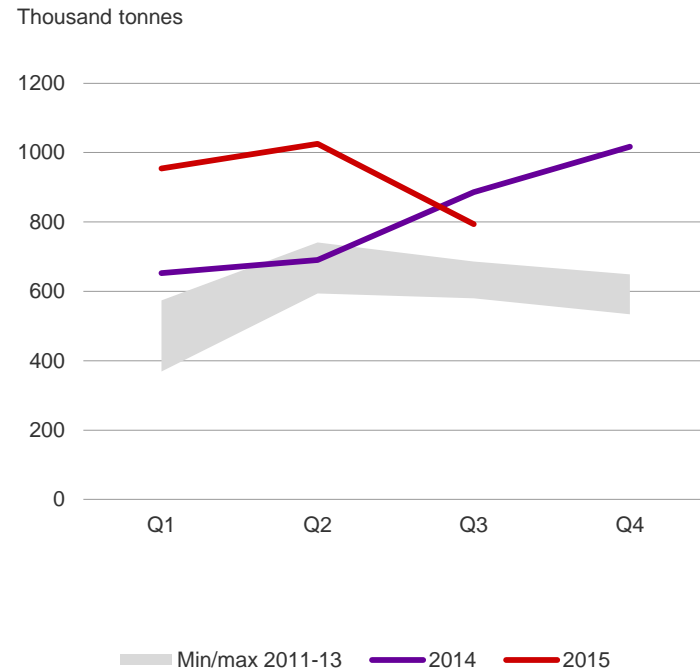
- Solid momentum in building & construction
- F-150 production lifting semis demand in transport
- Eurozone semis demand stable

Source: CRU, Hydro Analysis

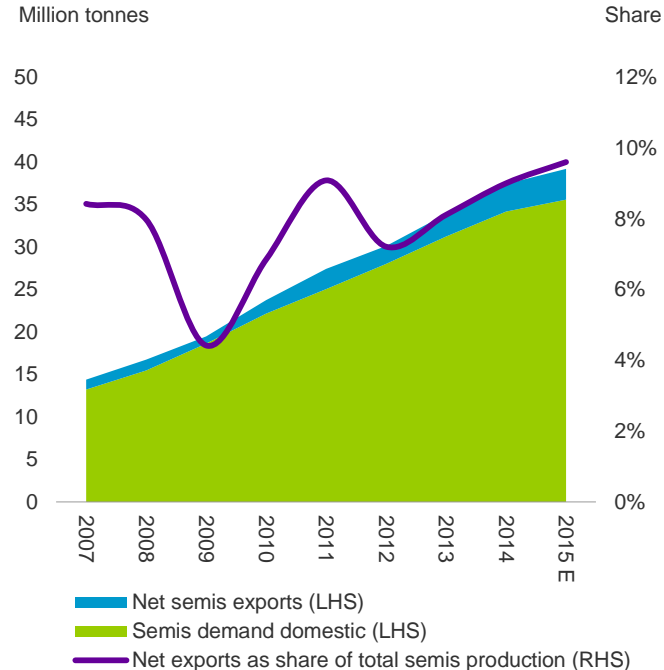
Increased Chinese semis exports over the last year driven by arbitrage

Largely stable development as share of total semis production

Quarterly net semis exports



Net semis exports as share of total semis production



Comments

- Moderating export levels during last months on the back of reduced arbitrage opportunity
- Some semis exports regarded as semis for remelt
- Further shifts in Chinese surpluses and liquidity issues might increase export levels

Source: CRU, Antaike, Hydro Analysis
*Annualized YTD net semis exports (incl. October)

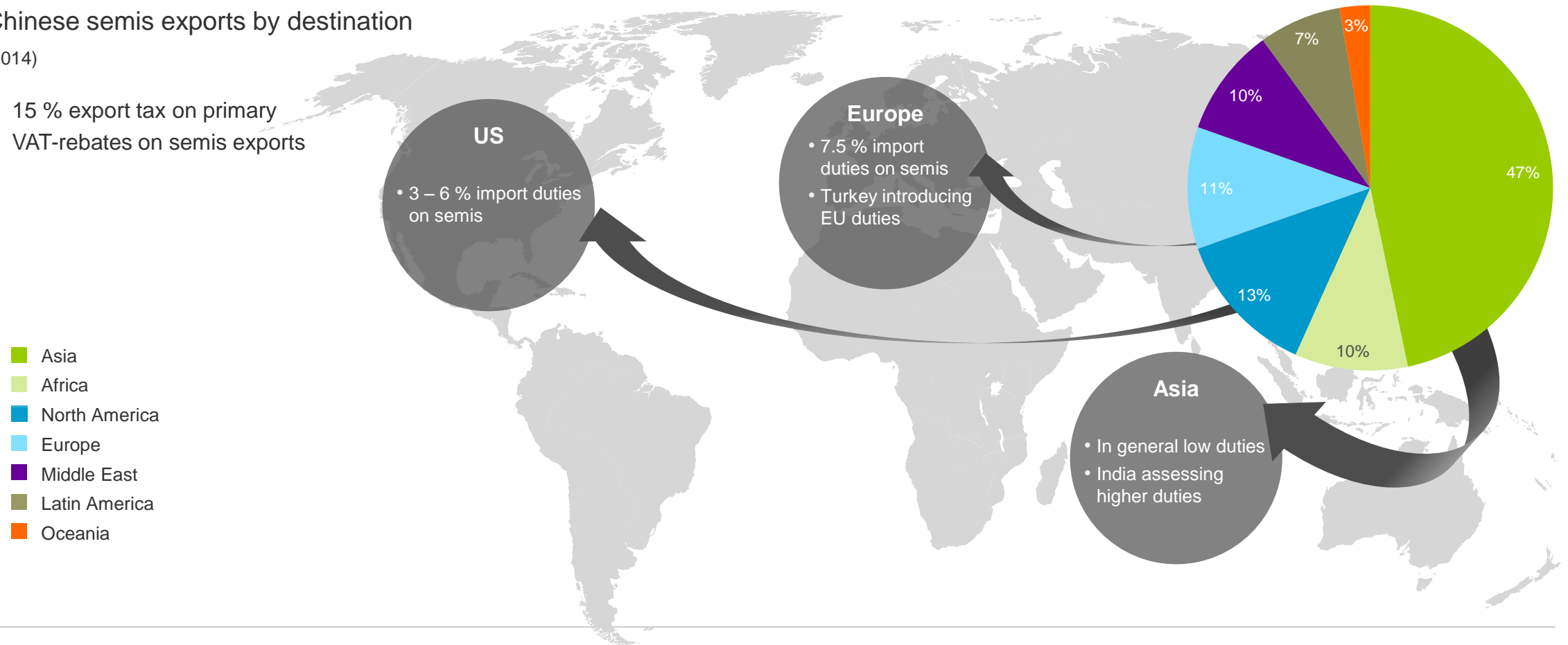
Asia key region for Chinese semis exports

Trade regulations and duties impacting trade flows

Chinese semis exports by destination

(2014)

- 15 % export tax on primary
- VAT-rebates on semis exports



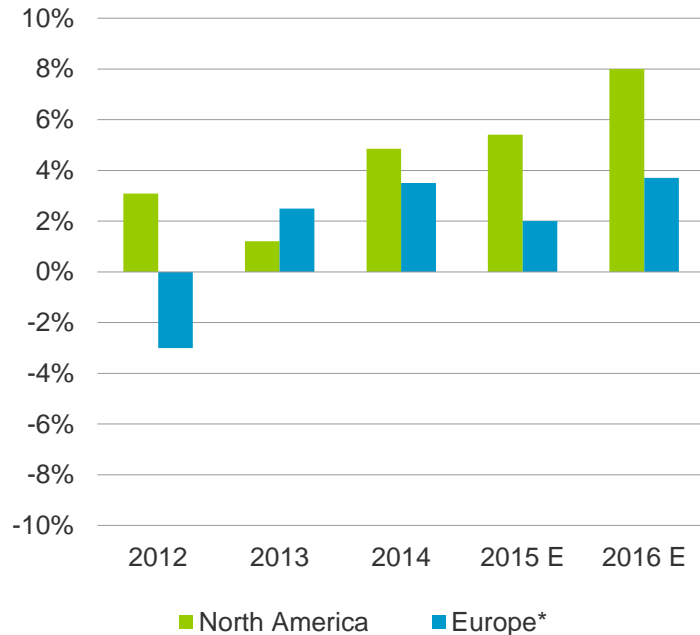
Source: Hydro Analysis, Antaika

Transport segment continues to drive demand for rolled products

Transport increasing its share of total rolled products demand

General rolled products demand, selected regions

YoY-growth

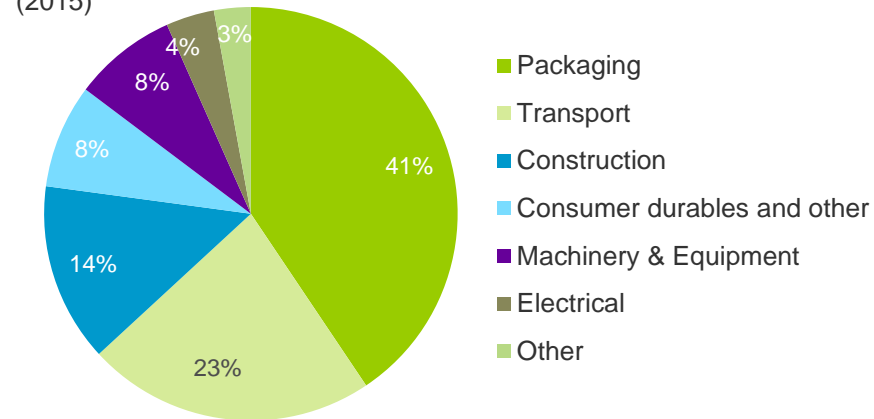


Expected market development

- Strong demand contribution from increased aluminium usage in transport segment
- Healthy growth expected in packaging segment driven by end-consumer packaging

Global segment composition, rolled products

(2015)



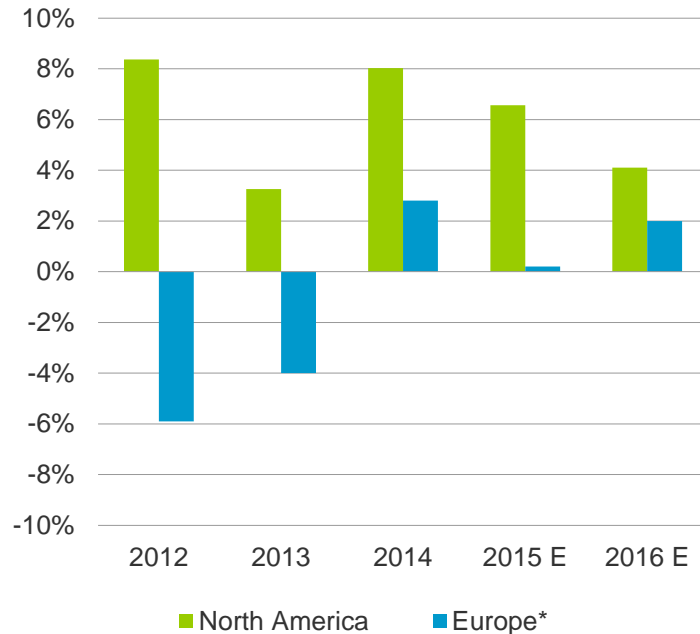
Source: CRU, Hydro Analysis
*Total EU27+EFTA

Solid uptake in the US extrusion market

Gradual improvement expected in Europe

Extrusion demand, selected regions

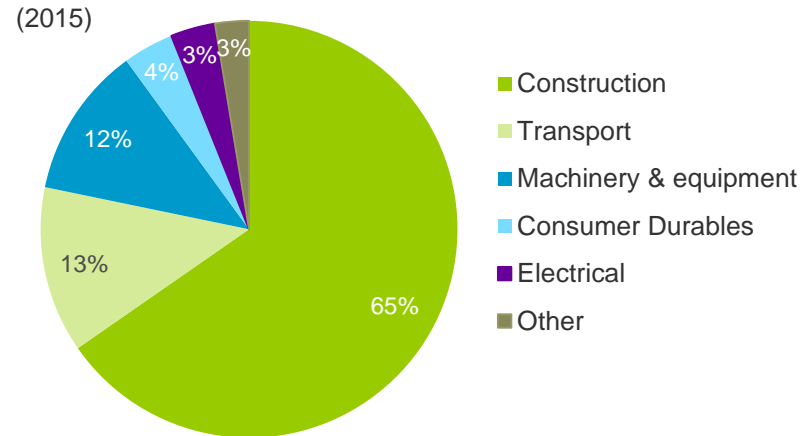
YoY-growth



Expected market development

- US housing market sustaining positive momentum
- Construction activity in peripheral Europe showing recovery signs, although from low levels
- Growth in transport segment

Global segment composition, extrusion (2015)



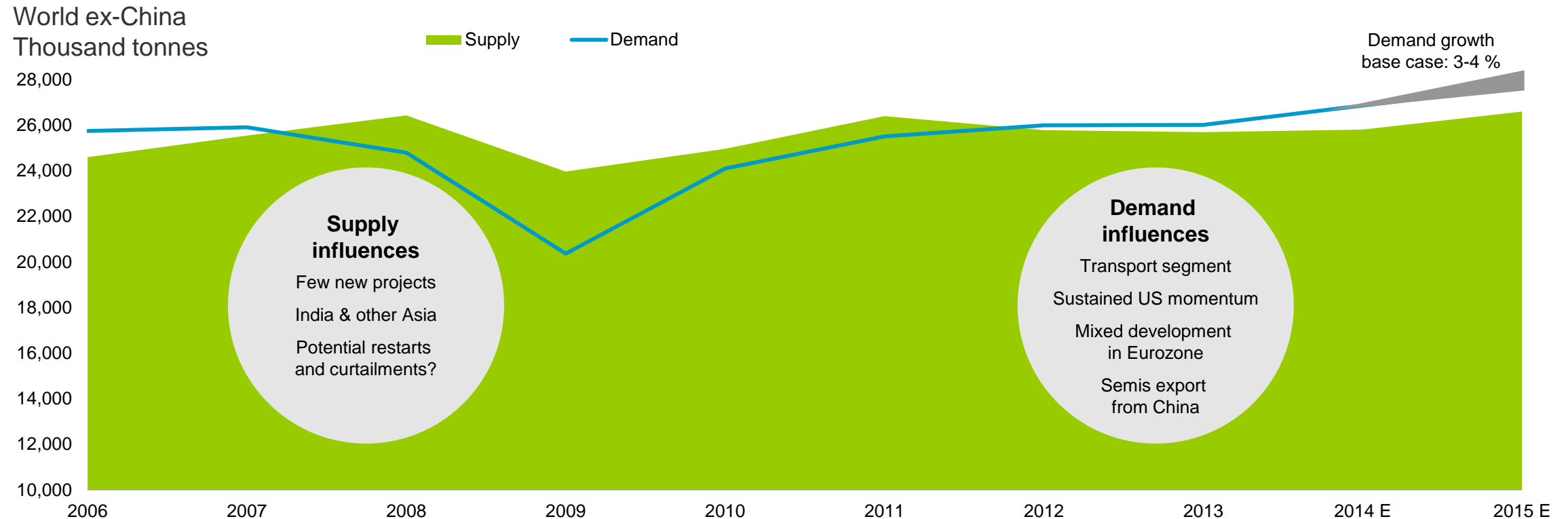
Source: CRU, Hydro Analysis
*Total EU27+EFTA

02

Primary metal market

Recap Capital Markets Day 2014: Expectations for modest inventory decline also in 2015

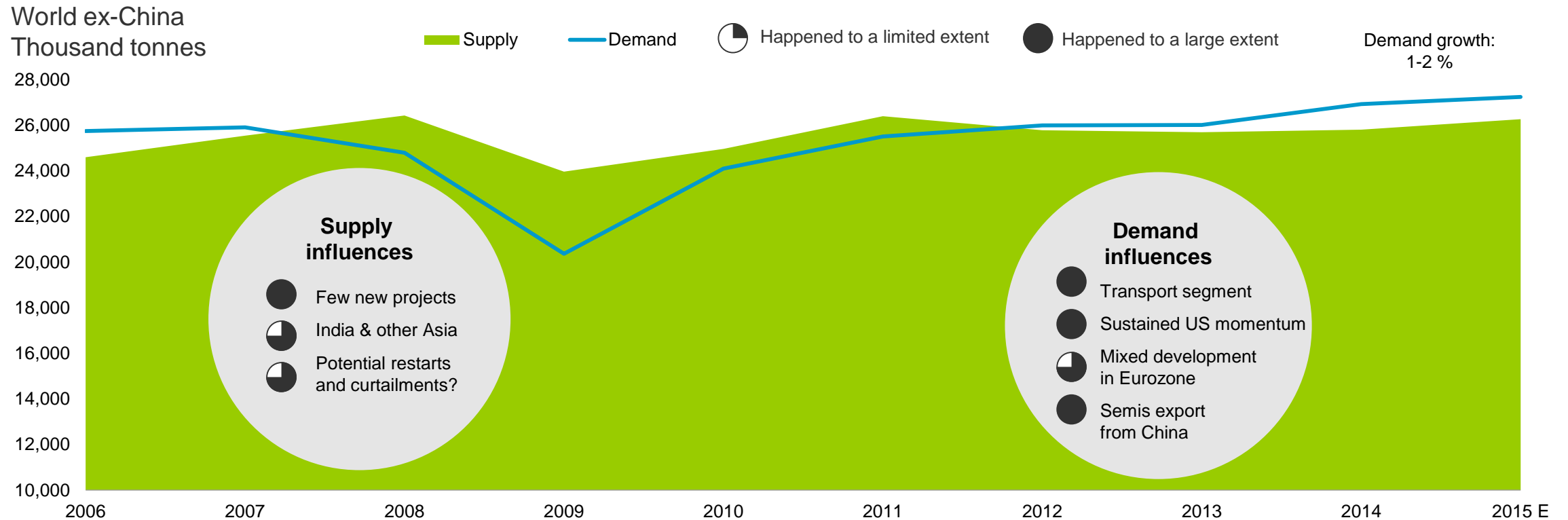
Tight market balance continuing



Source: CRU, Hydro Analysis

Market balance progressing largely in line with expectations

Weaker demand in some emerging markets, semis for remelt exports from China limiting market deficit

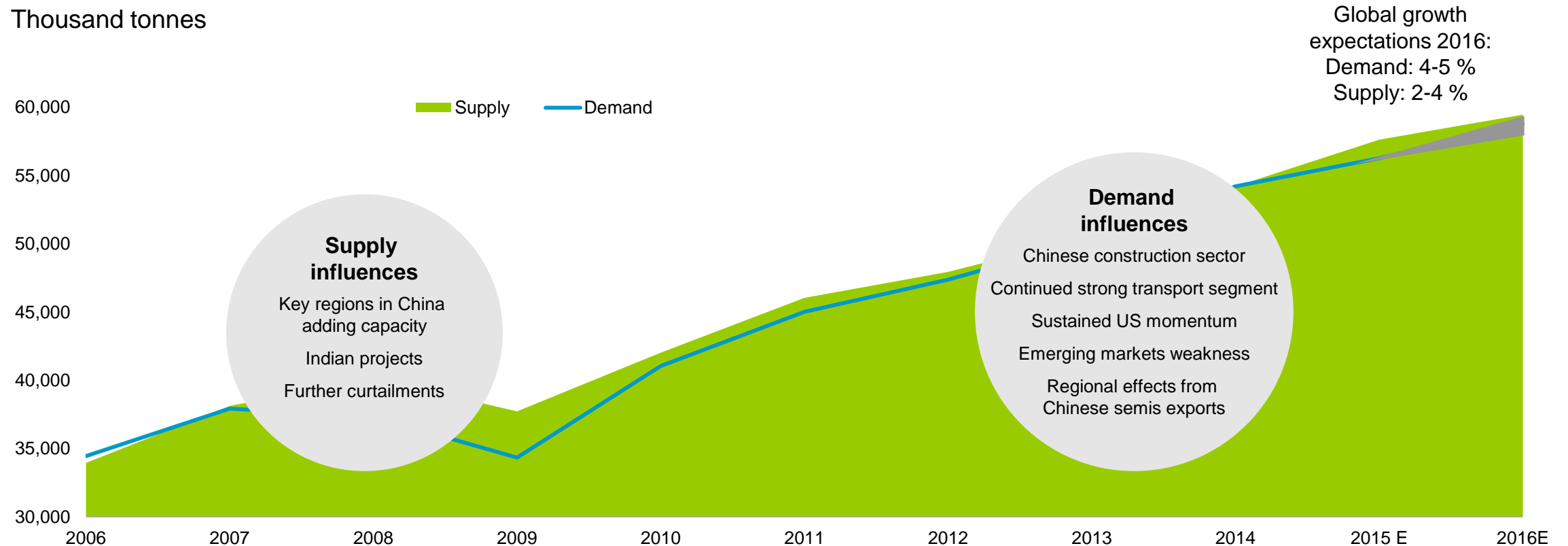


Source: CRU, Hydro Analysis

Global surplus expected to moderate in 2016

Surplus moderating from ~1 million tonnes to 0-1 million tonnes

Global
Thousand tonnes



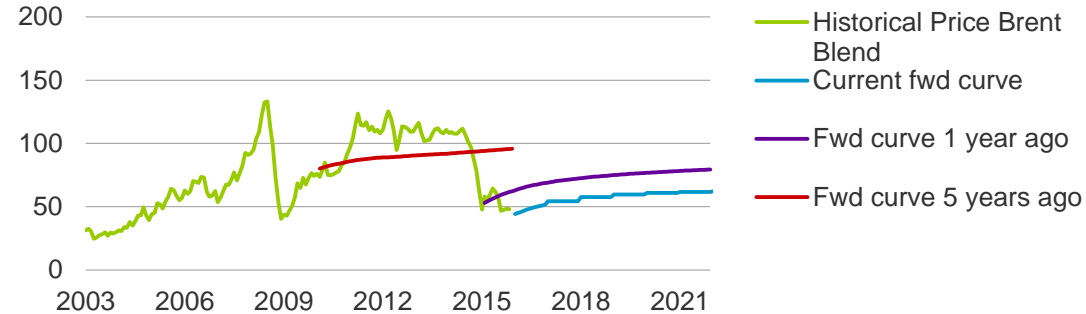
Source: CRU, Hydro Analysis

Aluminium costs affected by lower energy cost and FX developments

Oil and coal prices trending lower, large movements in currencies vs USD

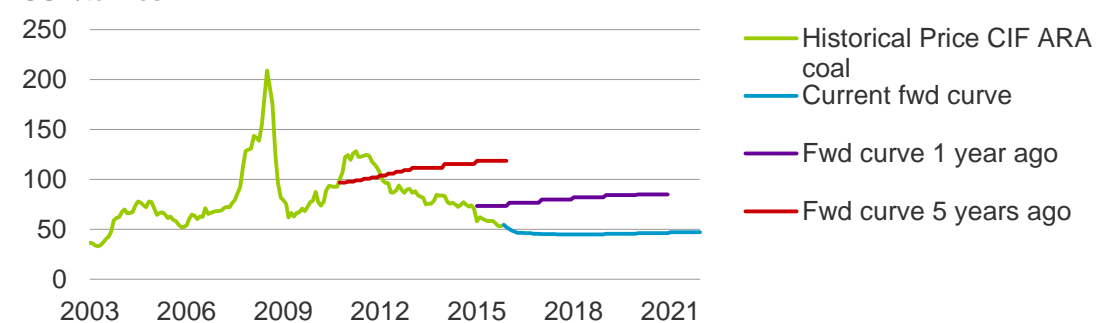
Oil price

USD/barrel

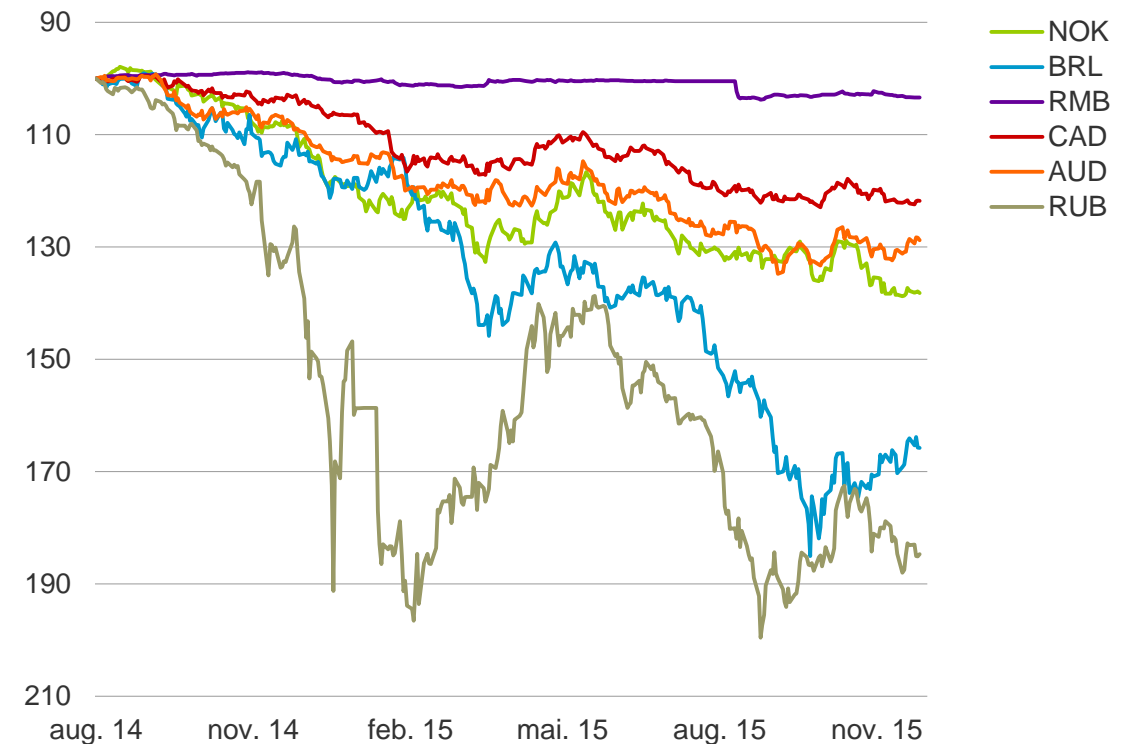


Coal price

USD/tonnes



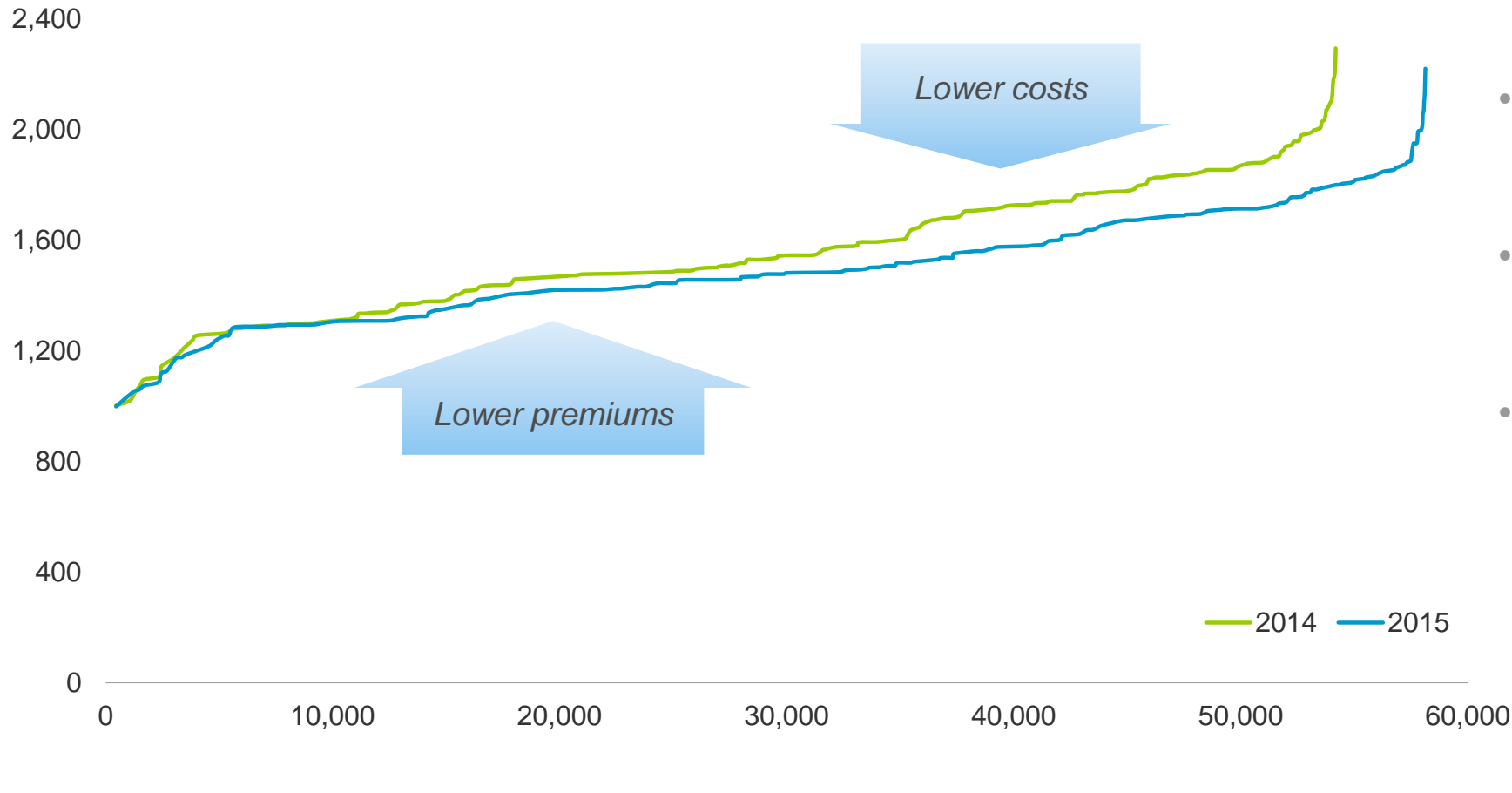
Currencies Indexed vs USD, Aug 1st 2014=100



Source: Thomson Reuters

Currency movements influencing relative positions on global cost curve

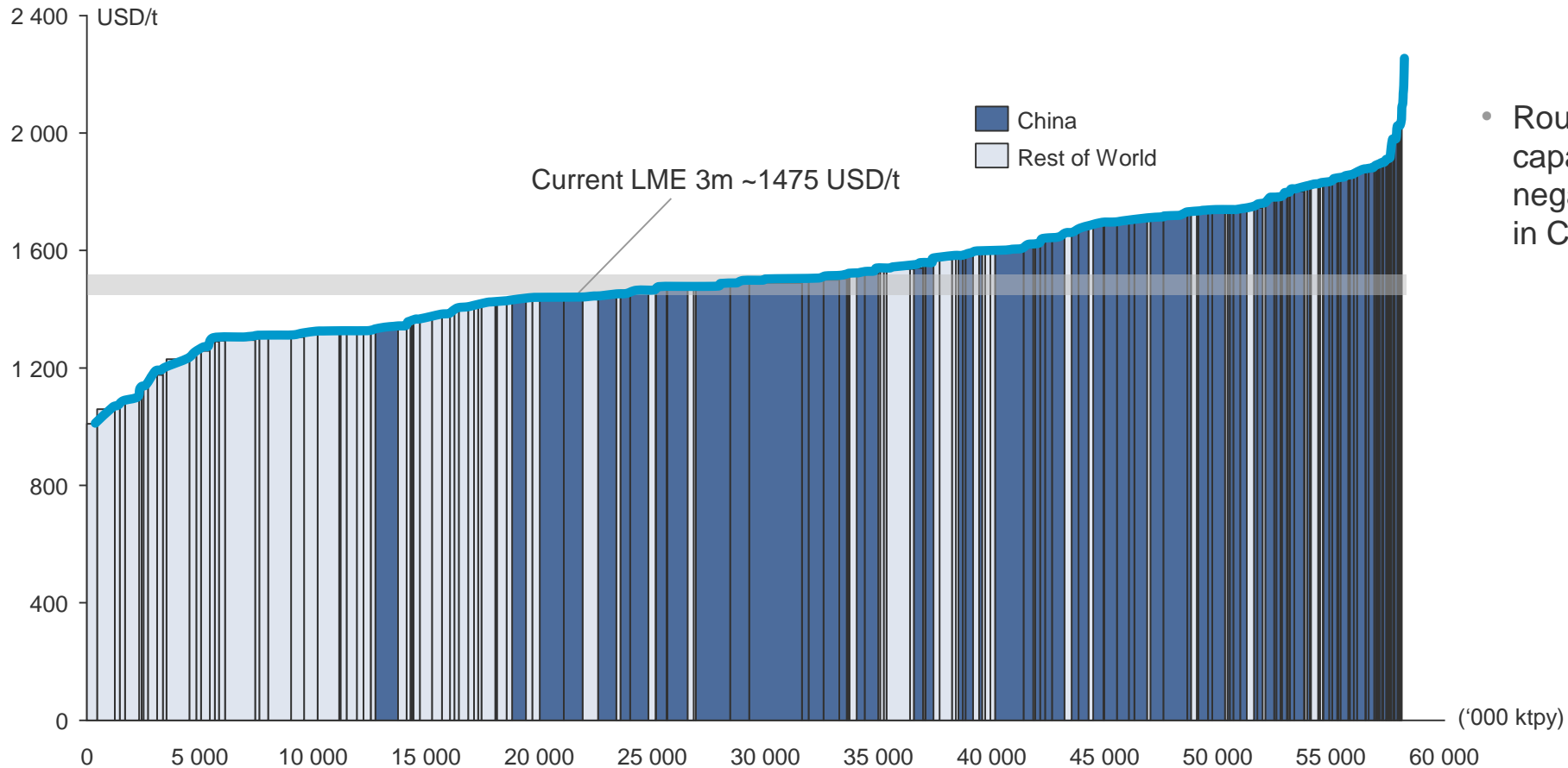
Global Business operating cost, 2015
USD/tonne



- USD denominated smelters losing relative competitiveness
- Chinese smelters to a larger extent benefitting from lower coal prices
- Lower premiums pushing business operating costs up

Source: CRU, Hydro Analysis

Most Chinese smelters in the 3rd and 4th quartile on the global cost curve



- Roughly half of global smelter capacity currently cash negative, most of this located in China

Source: CRU, Hydro Analysis

Market balance in China remains uncertain

Uncertain supply growth

- Large capacity increases of past years unlikely to be repeated
- Focus shifting from top-line growth to bottom-line profitability
- Slower demand growth not yet impacting investments
- Continued focus on supporting local employment, but financial positions are becoming constrained

Softer demand growth

- Construction activity still weak, but housing prices picking up
- Transport sales rebounding, moderate car production
- Government stimuli

Upstream positioning

- Depleting domestic bauxite resources affecting costs
- Investment focus may shift from inland (Xinjiang / Inner Mongolia) to coastal areas (Shandong)
- Power market reform reducing power cost

SHFE 3 month prices at all-time low

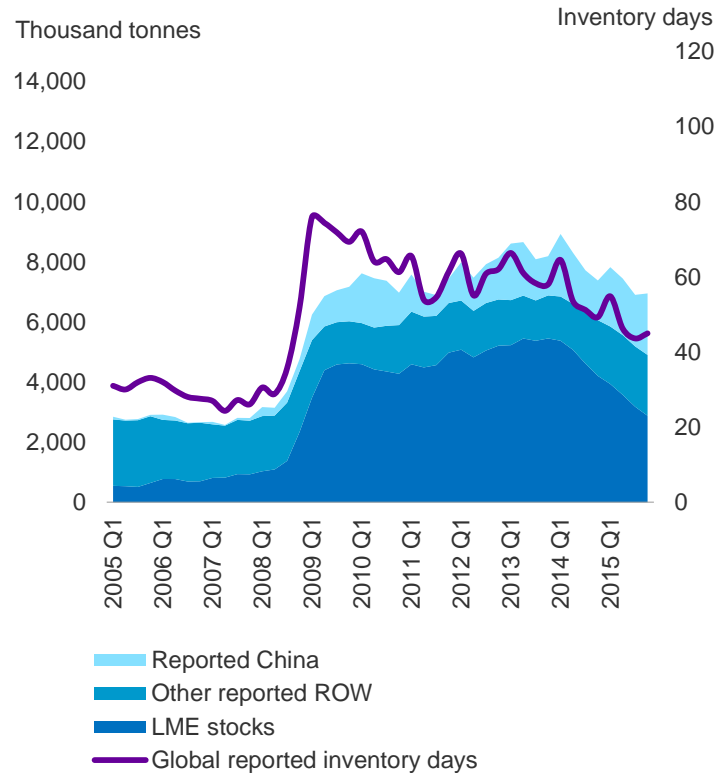
RMB/tonne



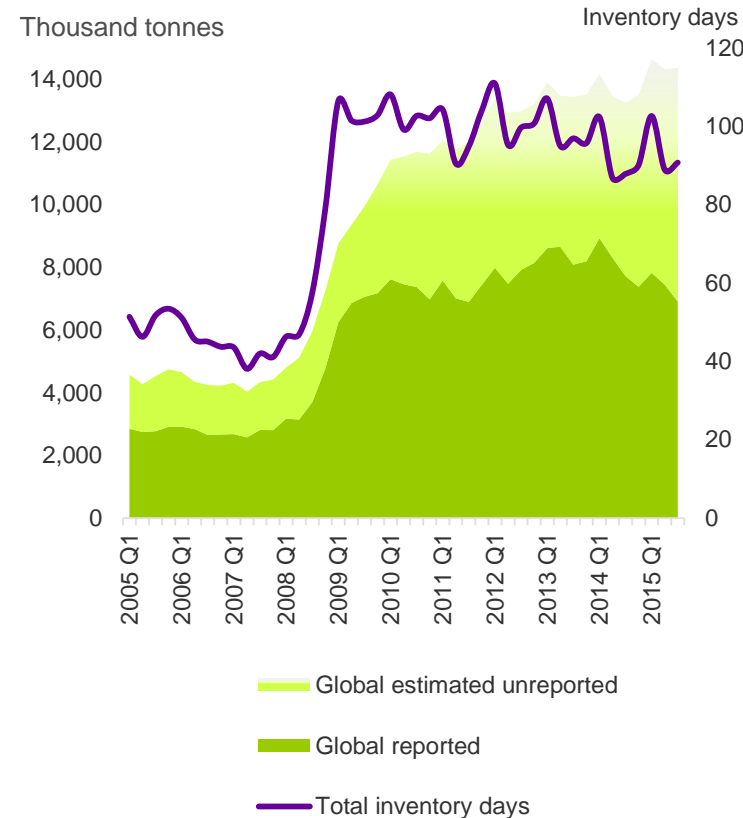
Source: Hydro Analysis, Thomson Reuters

Global reported stocks decreasing, uncertain unreported volumes

Global reported stocks and inventory days



Total global stocks and inventory days



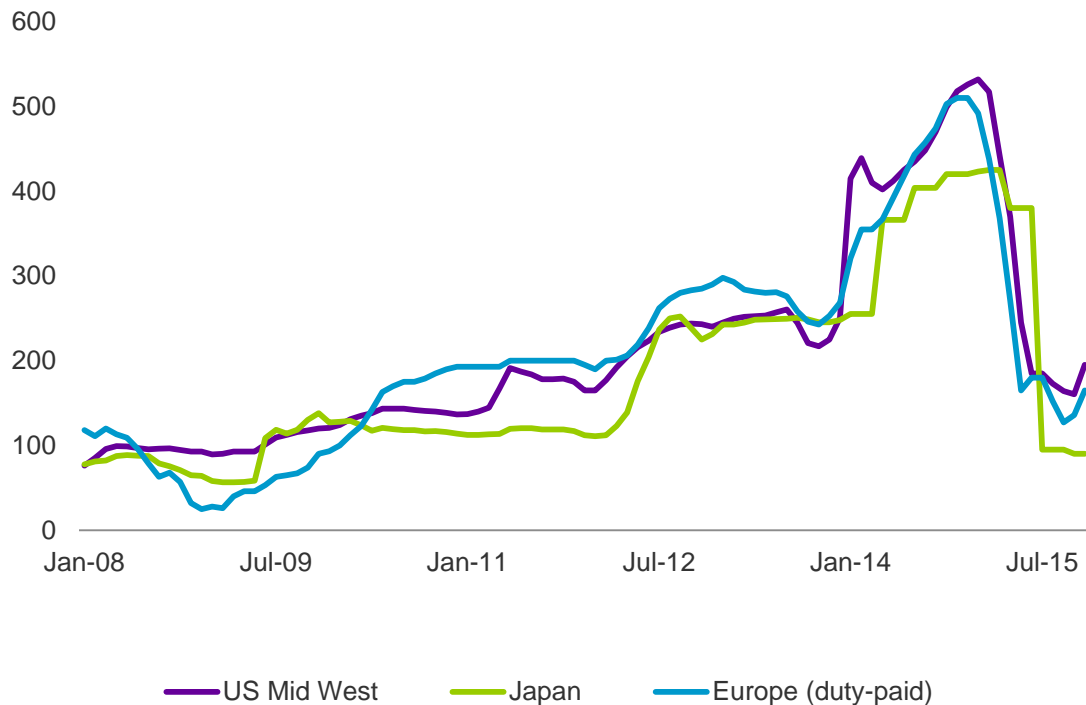
- Reported stocks decreasing over last year
- LME stocks lowest since the financial crisis
 - Influenced by new LME warehousing regulations
- High uncertainty regarding absolute level of unreported volumes

Source: CRU, Hydro Analysis

Regional standard ingot premiums falling back to historical levels, all-in price fall in NOK moderated by currency effect

Regional standard ingot premiums

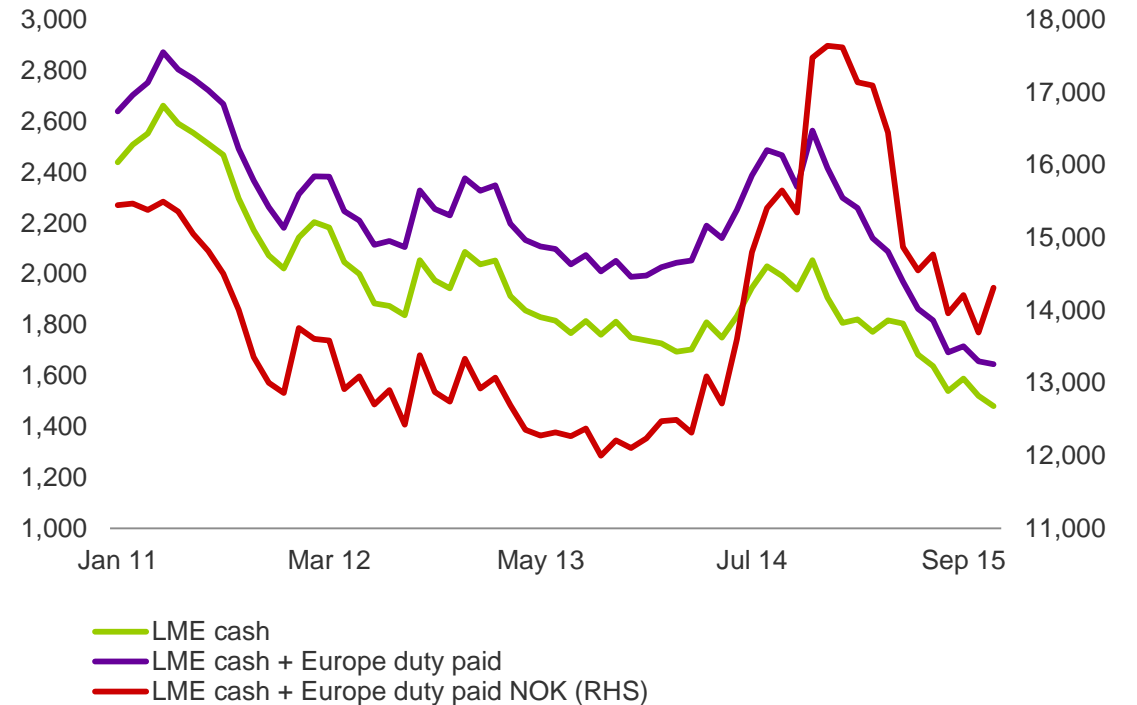
USD/tonne



All-in price

USD/tonne

NOK/mt



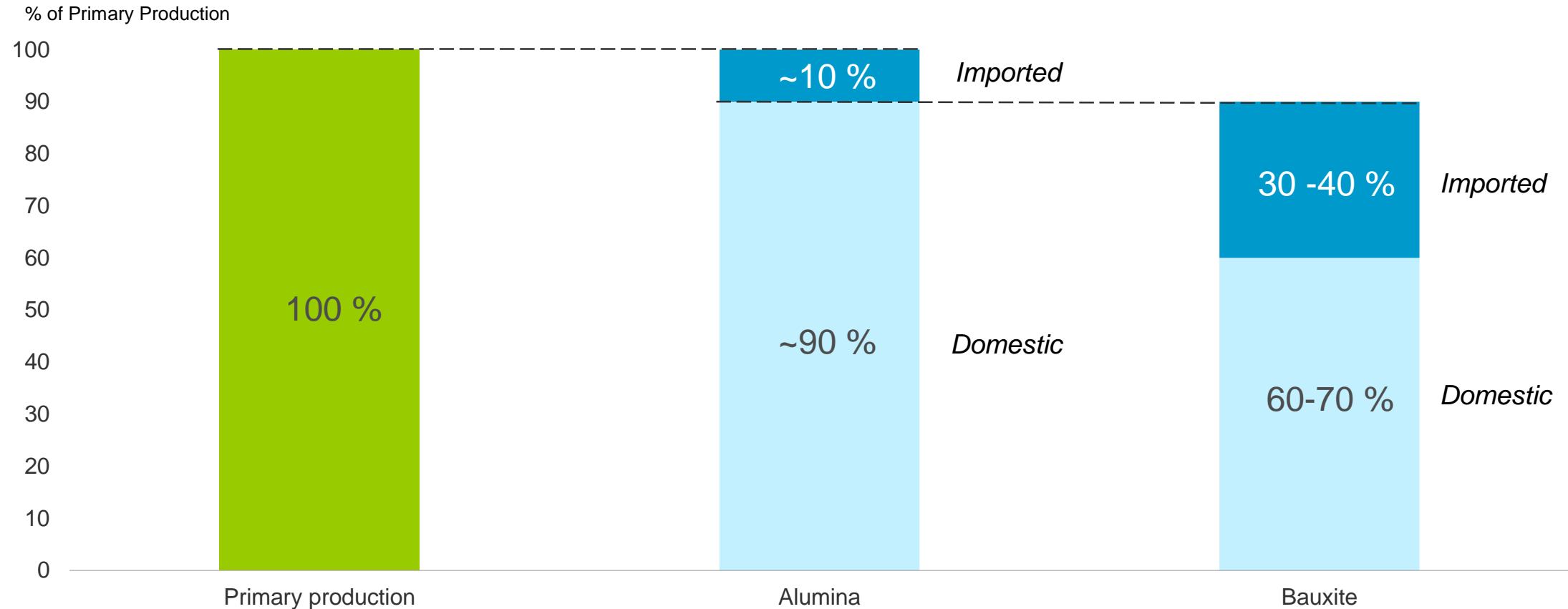
Source: CRU, Hydro Analysis

03

Bauxite and
alumina market

Chinese primary production dependent on imported resources

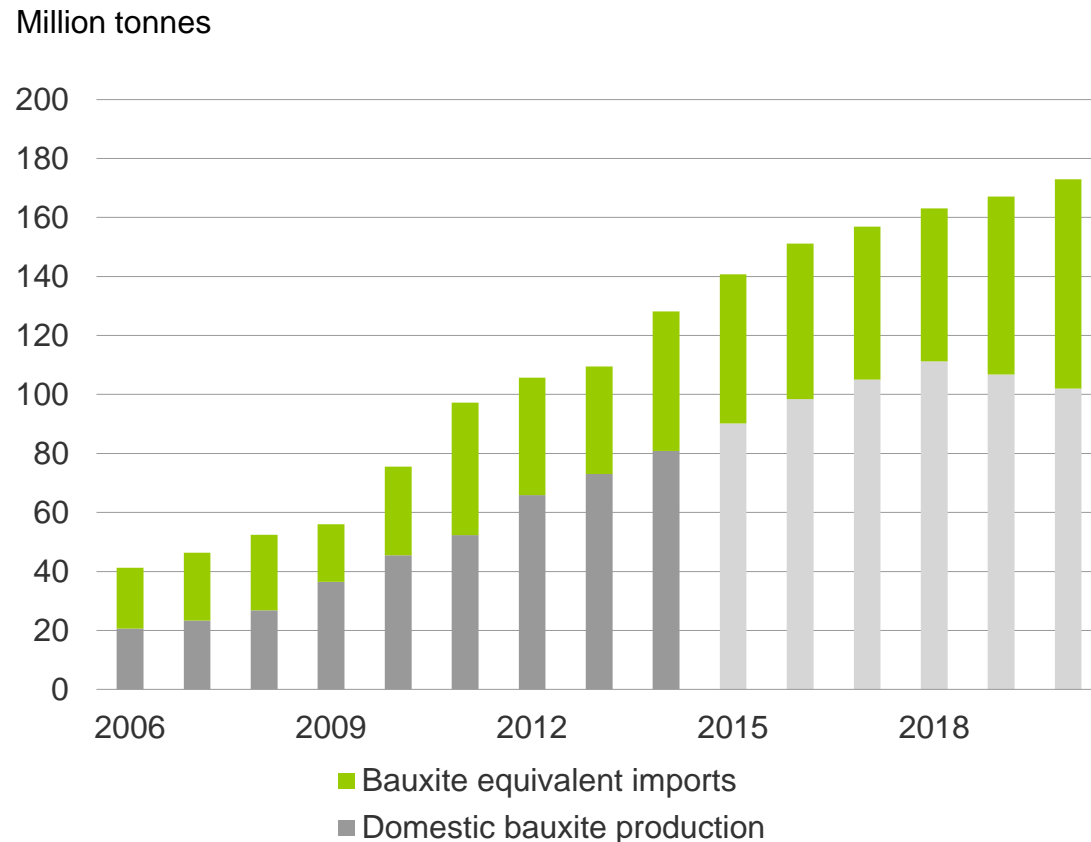
Around 40% based on imported raw material in 2012-2014



Source: CRU, China customs

Chinese bauxite import dependency expected to increase

Domestic bauxite production not keeping pace with demand



Chinese bauxite import requirements remain high

- New domestic resources not sufficient to meet demand longer term
- Domestic bauxite resources with lower quality and higher costs
- Current new investments and announcements in alumina refineries in coastal areas dependent on imported bauxite

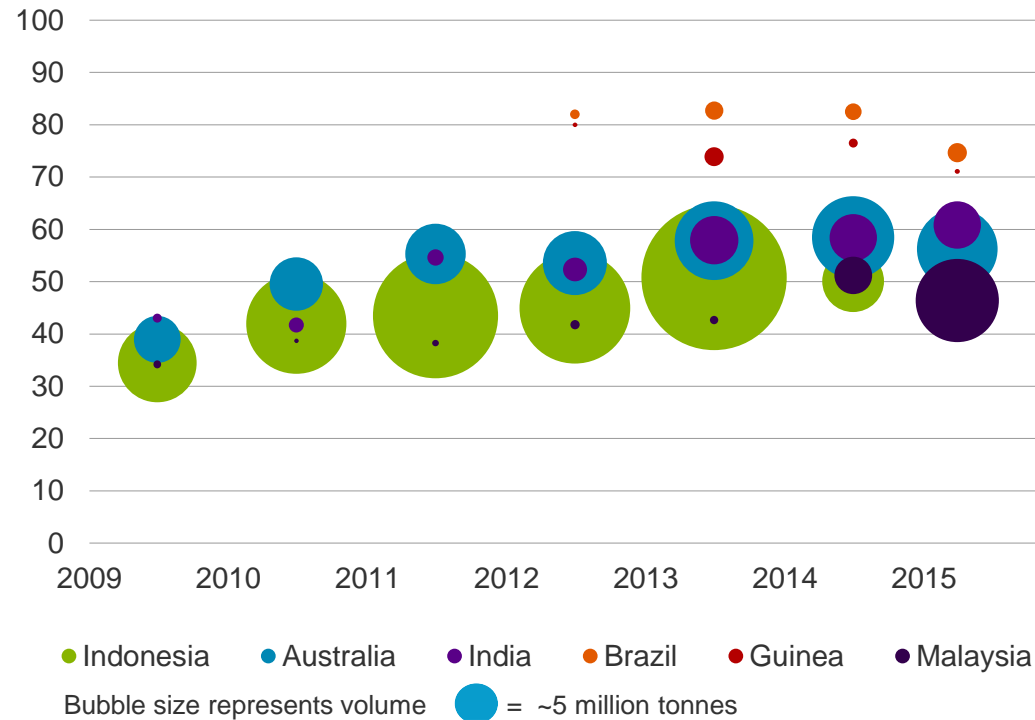
Source: CM Group

Malaysia emerging as largest bauxite exporter to China in 2015

Brazilian bauxite traded at a premium on the back of higher freight, but also higher value in use

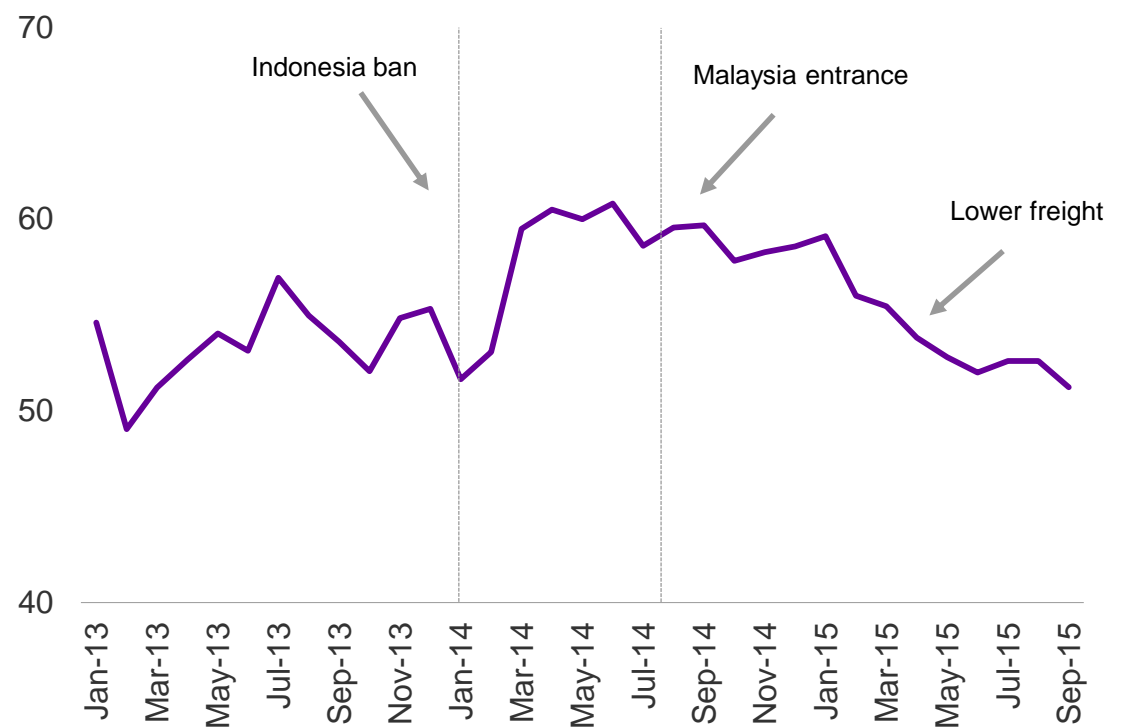
China bauxite imports, volume and price by country

USD/tonne CIF



Bauxite price CIF China

USD/tonne

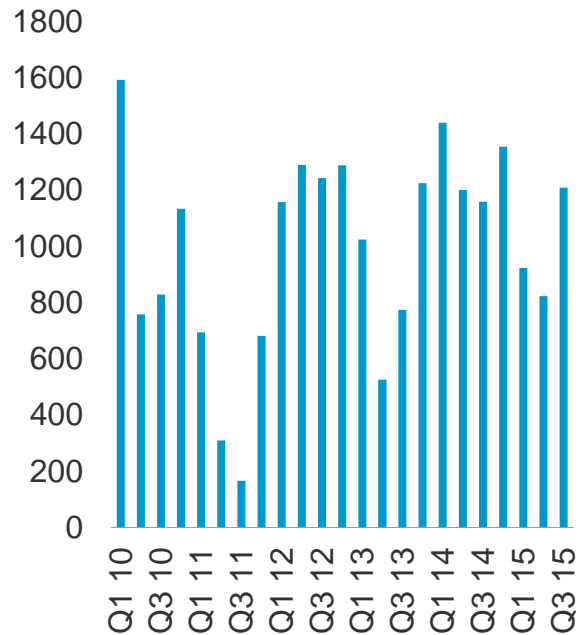


Source: China Customs

Alumina prices falling on the back of oversupply and lower costs

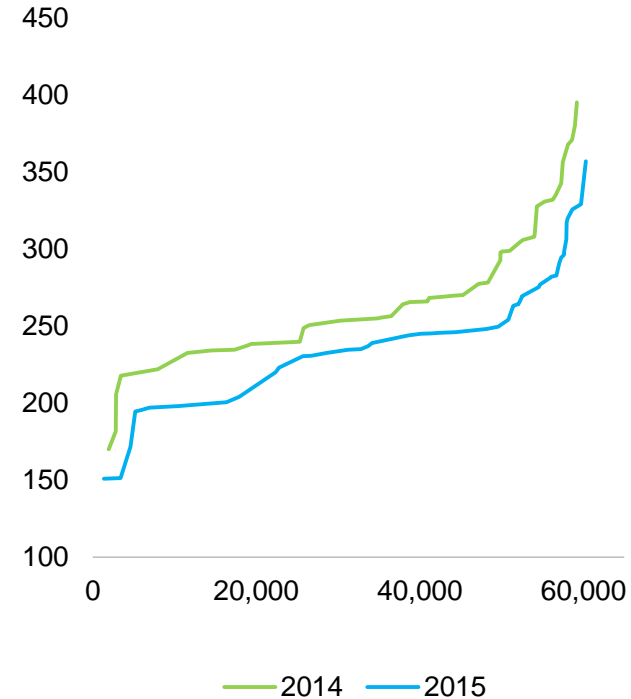
Lower Chinese alumina imports creating oversupply ex. China

Chinese alumina imports quarterly, thousand tonnes



Cost curves shifting down

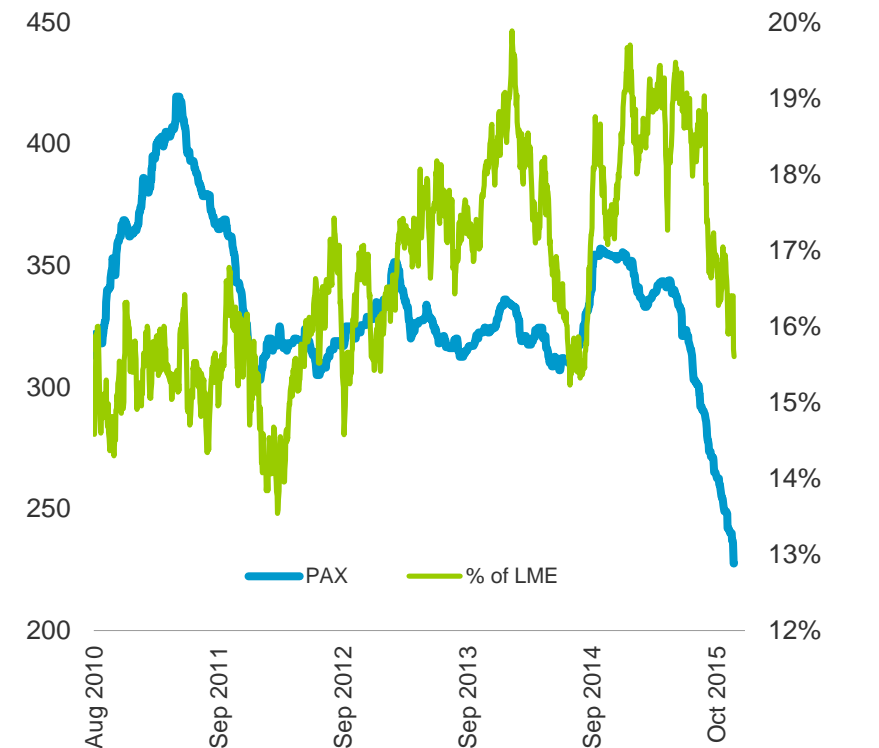
World ex. China USD/tonne



Alumina price falling

USD/tonne

Share of LME

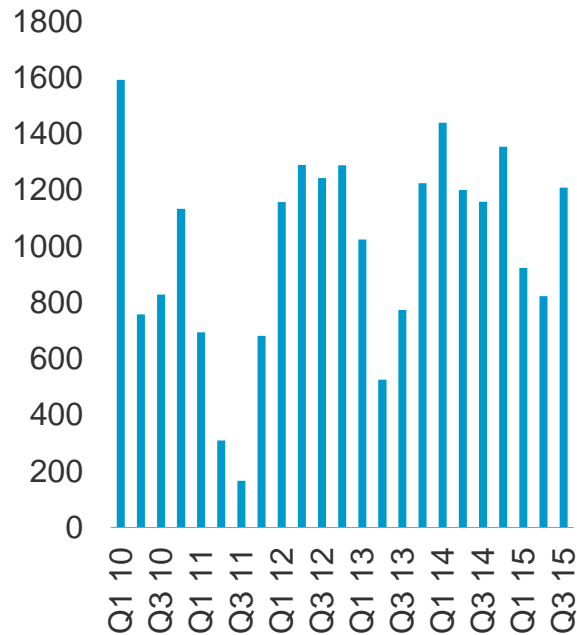


Source: China customs, CRU, Hydro analysis

Alumina prices falling on the back of oversupply and lower costs

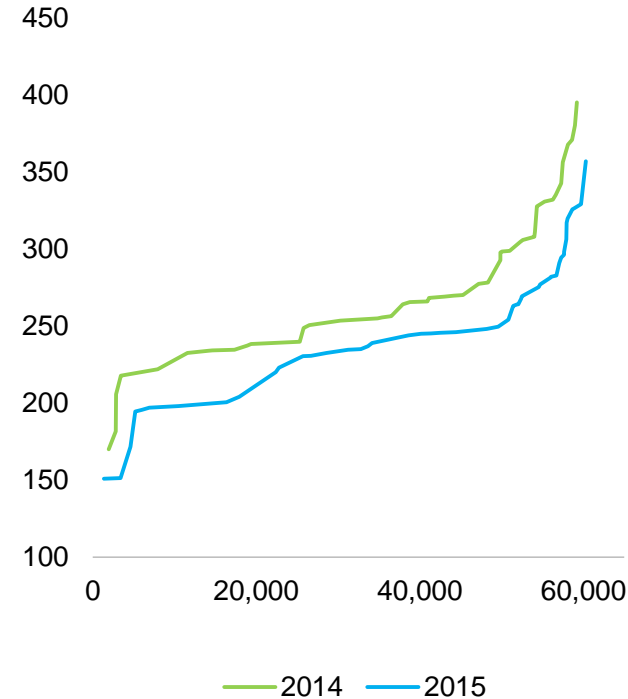
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Chinese alumina imports quarterly, thousand tonnes

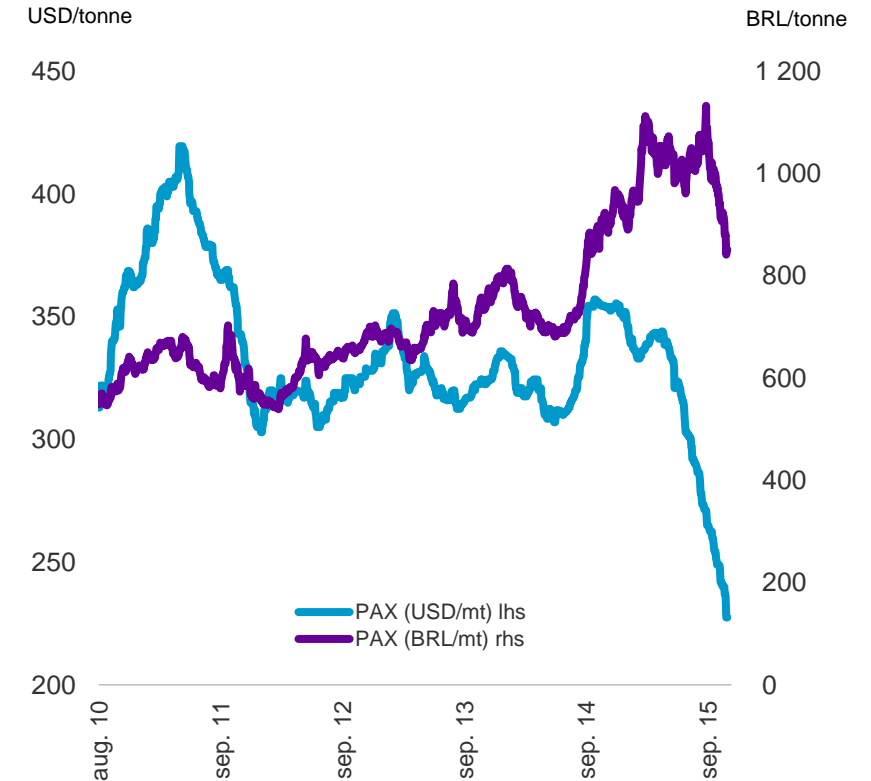


Cost curves shifting down

World ex. China USD/tonne



...but falling less in BRL

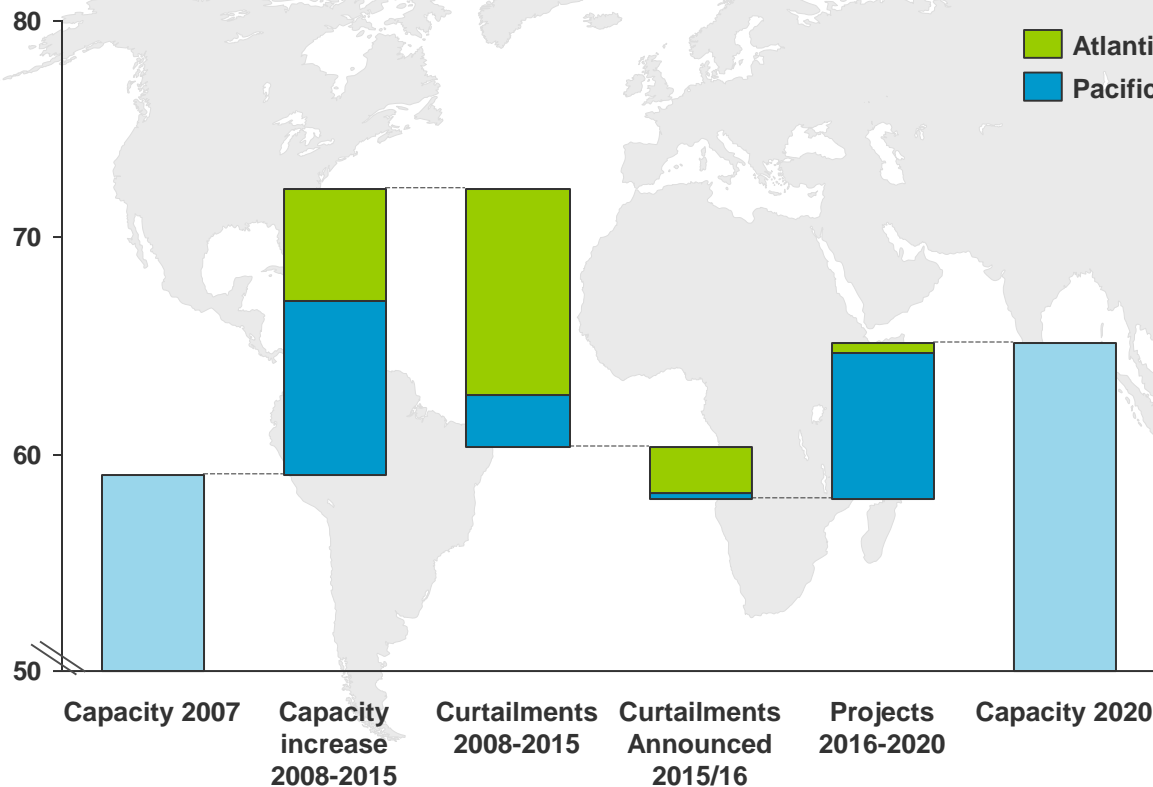


Source: China customs, CRU, Hydro analysis

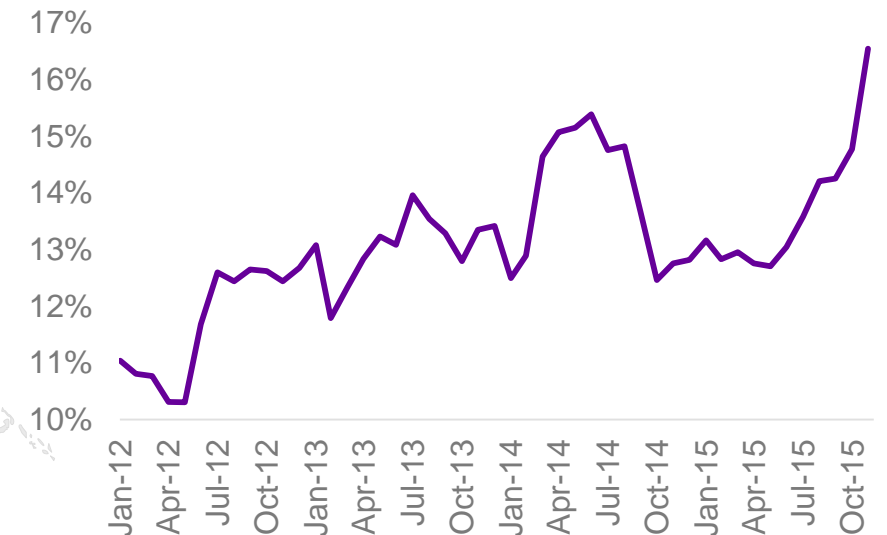
Few new alumina projects seen world ex-China in the coming years

Further curtailments probable

World ex. China
Million tonnes per year



Bauxite/Alumina Price* (%)



- Alumina prices falling, while bauxite prices have remained largely stable over the last months
- Chinese refineries using imported bauxite facing margin pressure

Source: CRU, China customs

*CIF China bauxite relative to Chinese alumina price (Ex-Henan). Proxy for November using actual alumina data and CIF bauxite for October






04

Long-term outlook

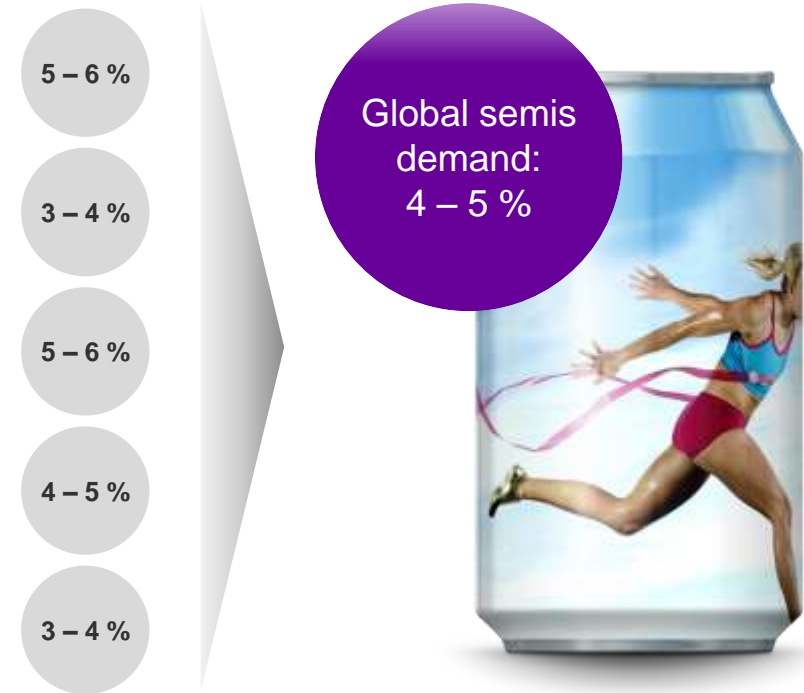
Strong growth drivers across segments providing solid demand outlook

Short-term macroeconomic volatility, long term fundamentals still in place

Strong demand drivers in key aluminium segments

	Transport	Growth in automotive vehicle production Aluminium content in cars increasing Growth in other transport modes, e.g. railway
	Construction	Urbanization Housing market recovery in mature regions Energy neutral buildings
	Electrical	Urbanization Copper substitution
	Machinery & equipment	Improving industrial sentiment in mature regions Manufacturing activity and industrial growth in emerging countries
	Packaging	Urbanization Environmentally-friendly solutions

Semis demand CAGR 2015 – 2025

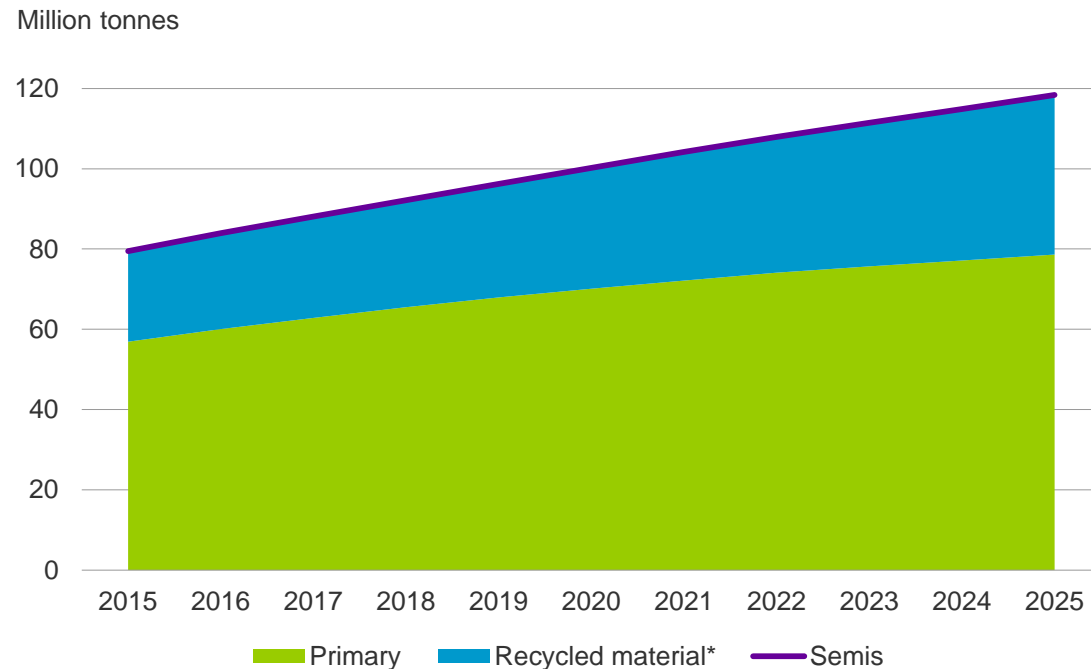


Source: CRU, Hydro Analysis

Growth in global semis demand creates opportunities for both primary and recycled material

Recycling share increasing, primary demand growth remains firm

Global demand outlook



CAGR 2015 – 2025



Source: CRU, Hydro Analysis
*Post-consumed and fabrication scrap

- Demand in mature regions boosted by transport segment, short-term softness in emerging markets
- Lower aluminium prices amid lower input costs, FX developments & market surplus
- Roughly half of global smelter capacity currently cash-negative; most of this located in China
- Chinese bauxite import dependency continue to increase
- Solid long-term demand outlook supported by strong growth drivers across segments



Better Bigger Greener